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目　　次

Contents

〔表紙カットの説明〕 抱かきつばたの紋章

〔Explanation of the cut in the cover〕 *Iris laevigata* Fischer emblematized as a crest of a family in Japan. (K. Hisauchi)

朝比奈泰彦*: 地衣類雑記 (§143)

Yasuhiko ASAHINA*: Lichenologische Notizen (§143)

§143. On the Chemical Ingredients of Usnea diffracta Vain.

In 1932 the writer and Fujikawa[1] isolated from *Usnea diffracta* Vain. besides usnic acid a new monomethyl ether of barbatic acid and called it diffractaic acid. Since then numerous specimens of *Usnea diffracta* were treated with the writer's microchemical method—confirming always the occurrence of the diffractaic acid. Under these circumstances an older report of the writer and Yamashita[2] that *Usnea diffracta* contains barbatic acid, was discarded as a doubtful result.

Recently Mr. Kurokawa brought me diffracta specimens, in one of which he found barbatic acid and in another barbatic as well as diffractaic acids—an evidence that the result of Asahina and Yamashita was nevertheless an undeniable fact. To decide this question statistically I induced Miss Mariko Nuno to test all diffracta specimens preserved in my herbarium microchemically. From her result it may be concluded that the greater part of the specimens contain diffractaic acid, and barbatic acid occurs in place of the latter with about 20% frequency. As it may be seen from her procedure, the judgement of the ingredients of each specimens is made by the dominant crystals after the recrystallization of benzene extract from G. E. solution under cover glasss. But any of such preparations which yielded minute prismatic crystals of barbatic acid may exhibit after standing for some time a few aggregates of curved and branched trichites (diffractic acid). When the diffractaic acid predominates it is difficult to recognize the formation of barbatic acid crystals. At any rate the writer is of opinion that *Usnea difracta* may produce both acids (diffractaic as well as barbatic acids) at the same time, but in different proportions according to the vital condition, just as stictic and norstictic acids occur simultaneously in *Lobaria pulmonaria*.[3] As yet we cannot recognize any distributional correlation in the predominant formation of one of the two ingredients.

サルオガセ（ヨコワサルオガセ）の成分としては 1932 年に朝比奈・藤川がウスネア属の常成分であるウスニン酸の外に特有成分としてヂフラクタ酸（モノメチールエーテ

* 資源科学研究所 Research Institute for Natural Resources, Shinjuku, Tokyo.

1) Ber. deutsch. chem. Ges. **65**: 175 (1932).

2) Journ. Pharmaceut. Soc. Japan no. 533, p. 47 (1926).

3) H. Schindler: Ber. deutsch. bot. Ges. **54**: 240–246 (1936).

ルバルバチン酸）を証明し，爾後多数の標本をミクロ法で検査し常にヂフラクタ酸を確認して居た為に 1926 年に朝比奈・山下が報告したヨコワサルオガセの成分はウスニン酸とバルバチン酸であると云う結果は疑問視され或は寧ろ無視されて居た所が最近黒川逍君が北海道産の或標本中にミクロ法でバルバチン酸を含むもの及バルバチン酸とヂフラクタ酸とを同時に含むものを発見し筆者に通報されたので朝比奈・山下の報告も事実無根のことではないと云う証拠があらわれたが更に此点の真相を統計的に調査する様に布万里子嬢に依嘱し別項の如き結果が現われた。即ち東亜産四百五十五点の検体を調査した結果 20% 弱の頻度でバルバチン酸が出現することが分明した。而もバルバチン酸が多量に含まれて居る検体でもクミロ法のプレパラートを長時間放置すると短柱状のバルバチン酸の結晶の中に細い屈曲したヂフラクタ酸の毛状晶も出現することは稀でない。即ちヨコワサルオガセは元来ヂフラクタ酸とバルバチン酸とを産生し，唯両者相互の量的関係が異るものと解釈すべきであろう。以上の事実はカブトゴケ *Lobaria pulmonaria* でスチクチン酸と其デメチル化合物であるノルスチクチン酸を同時に含んで居る実例に鑑み興味ある現象である。

○ハマカキランに就いて（小山鉄夫・浅井康宏） T. Koyama & Y. Asai: Note on *Epipactis Sayekiana* Makino, a maritime variety of *E. papillosa* Fr. & Sav.

ハマカキランはアヲスズランに似て桃色花を開く海岸生のランで，相模と上総に報告されている。この植物は茅ケ崎から片瀬にかけて松林の砂地に特に多く生えていて，私達は数年間その消長を見て居るが，年によつてかなりの増減がある。本植物とアオスズランの差は主として花色に置かれているが，アオスズランに比して根茎の節間が長いとも言われる。私達の見る処では，全体稍アオスズランより大きく，強壮であるが，花色に関する限り桃色から，黄緑色，緑色，白色の変化がある。結局アオスズランとの差異は生態的な差のほか，それに伴う植物体の大きさのずれ以外に無く，ハマカキランはアオスズランの変異と見られる。今度神奈川県植物誌の発刊を機に下記の組合せを行つた。

Epipactis papillosa Franchet & Savatier

var. **Sayekiana** (Makino) T. Koyama & Asai, st. nov.

E. Sayekiana Makino (in Journ. Jap. Bot. **2**(1): 22. 1918, nomen tantum) ex Makino & Nemoto, Fl. Japan 1169 (1925)—*Serapias Sayekiana* (Makino) Makino in Journ. Jap. Bot. **6**(4): 8 (1929) & **7** (10): 29 (1931).

E. Sayekiana Makino is a maritime form of the montane *E. papillosa*, differing therefore only by its relatively robust habit and its usually pinkish perianth segments.

布 万里子*: ヨコワサルオガセ *Usnea diffracta* Vain. の含有成分

Mariko Nuno: On the chemical Ingredients of *Usnea diffracta* Vain.

Usnea diffracta Vain. は東亜特産の種で，朝比奈博士の日本之地衣第 3 冊ウスネア属 68 頁にはその含有成分としてはウスニン酸とヂフラクタ酸とが掲げられ，従来殆どこれに疑問を提出する様な例はなかつた。ところが最近，黒川逍氏が北海道産の一標本からバルバチン酸を証明し，又ある個体からはバルバチン酸とヂフラクタ酸とが共存する様な例もあるらしい事を朝比奈先生に報告された。そこで先生より現在先生の腊葉庫に保存されて居る *Us. diffracta* 標本の全部について，その含有成分を再検討するように指示を受けたので，その結果をここに報告する。

現在，朝比奈腊葉庫の *Us. diffracta* 標本は日本全土，台湾，朝鮮，満洲を合せて約 128 包ある。其各包は 1 個体から 10 数個体を含んで居る。このように多数の検体の成分を検討するには勿論朝比奈式のミクロ法に依るのであるが，今回筆者の応用した方法は次の様式であつた。

先ず検体は各包の中の一個体宛をよく分離し，目印をつけ其の先端又は一枝 (2–3 cm) を切断したものとする。之を浸出するには適当な硝子板 (手札板大かカビネ板) 上に裏面に番号を貼付したもの又は白紙に番号を少しづつ距離を置いて明記し，其上に硝子板を置き，其番号上に同番号の検体を置き各検体に数滴のアセトンを加えて乾燥するのを待つ。此方法でカビネ板の硝子板上には一度に 30 個位の検体の浸出が可能である。但し各検体間には適当の隔りを置ては滴下したアセトンが互に接触混合しない様な注意をする必要がある。浸出物が蒸発乾涸したならば地衣屑を筆で払い去り，浸出物をメスで掻取り，スライド上で G. E. (グリセリン・氷醋) 液を加え，カバーグラスで覆い常法によりミクロ酒精燈にかざし再結晶を行う。勿論 1 回の結晶が不確実の場合には更に新しい検体を使用して浸出及び再結晶を反復する。以上の操作でヂフラクタ酸は屈曲した毛状又は線状に出現し往々先端で房の様に分枝する。又バルバチン酸は細微な短菱柱晶又は短柱状六面体となつて出現する。稀に上記の結晶と交錯して全視野を横断する無色長針晶が現われる。日本の地衣第 3 冊 70 頁には此長針晶を生ずるものを *subdiffracta* と命名してある。

此様にして全標本を検討の結果，*diffracta* 標本の多数はヂフラクタ酸を含むが，其約 2 割弱にはバルバチン酸を含んで居り，更にバルバチン酸のみ含有とみられるものでも尚よく反復検討すれば若干のヂフラクタ酸をも認め得るし，又困難ではあるがその

* 薬理研究所.

逆の場合も証明される。此事は両成分の量的の差に依り結晶の現われ方に難易があると思われ，その化学構造が甚だ近似である事からも各々単一には存在せずに互に重複して居るものと考えられる。尚すすんでこれらの種名学的の解釈は別項の朝比奈先生の地衣類雑記 § 143 を参照されたい。

No.	Localities	Barbatic acid	Diffractic acid	Needles of unknown constitution	Numbers of examined individuals
1	Takinosawa, Saghalin	−	+	−	2
2	Sakaehama, Saghalin	−	+	−	2
3	Mt. Suzuya, Saghalin	−	+	−	2
4	Mt. Suzuya, Saghalin	−	+	−	2
5	Nemuro, Hokkaido	(i) +	−	−	28
		(ii) −	+	−	41
6	Shibecha, Hokkaido	+	−(˙)	−	1
7	Bihoro Pass, Hokkaido	−	+	−	2
8	Toyoni, Hokkaido	−	+	−	5
9	Toyoni, Hokkaido	−	+	−	2
10	Toyoni, Hokkaido	−	+	−	2
11	Mt. Apoi, Hokkaido	−	+	−	2
12	Yamabe, Hokkaido	−	+	−	2
13	Matuyama Hot Spring, Hokkaido	−	+	−	2
14	Lake Masyu, Hokkaido	−	+	−	3
15	Mt. Ashibetu, Hokkaido	−	+	−	2
16	Mt. Daisetu, Hokkaido	−	+	−	2
17	Kise, Mutu	−	+	−	2
18	Nishiyama-mura, Rikutyu	−	+	−	2
19	Ibonai, Rikutyu	−	+	−	3
20	Mt. Hayatine, Rikutyu	+	−	−	2
21	Yunohama, Rikuzen	−	+	−	2
22	Mt. Zaô, Rikuzen	−	+	−	2
23	Mt. Hunagata, Rikuzen	−	+	−	2
24	Hattyo-no-yu, Shimotuke	−	+	−	2
25	Yumoto, Nikko	−	+	−	2
26	Yumoto, Nikko	−	+	−	2
27	Yumoto, Nikko	−	+	−	2
28	Lake Tyuzenzi, Nikko	−	+	−	4
29	Nikko	−	+	−	2

30	Kirikomi, Nikko	−(?)	+	−	3
31	Mt. Shibutu, Oze, Kozuke	−	+	−	2
32	Mt. Tanigawa, Kozuke	−	+	−	3
33	Nippara, Musashi	−	+	−	5
34	Mt. Takao, Musashi	−	+	−	2
35	Mt. Takao, Musashi	−	+	−	2
36	Ootaki-mura, Titibu	−	+	−	2
37	Ootaki-mura, Titibu	−	+	−	2
38	Magoshiro Pass, Titibu	−	+	−	2
39	Mt. Tô-ga-take, Tanzawa	−	+	−	2
40	Mt. Tô-ga-take, Tanzawa	−	+	−	2
41	Mt. Tô-ga-take, Tanzawa	−	+	−	2
42	Mt. Hiru-ga-take, Tanzawa	(i) +	+	−	5
		(ii) −	+	−	11
43	Hakone, Sagami	−	+	−	2
44	Mt. Hutago, Hakone	−	+	−	2
45	Mt. Hutago, Hakone	−	+	−	2
46	Lake Ashinoko, Hakone	−	+	−	2
47	Mt. Amagi, Izu	−	+	−	2
48	Huzi-yoshida, Kai	−	+	−	2
49	1-gôme, Huzi-yoshida-guti	−	+	−	2
50	1-gôme, Huzi-yoshida-guti	−	+	−	2
51	1-gôme, Huzi-yoshida-guti	−	+	−	20
52	1-gôme, Huzi-yoshida-guti	(i) −	+	+	15
		(ii) −	+	−	10
		(iii) +	+	−	5
53	Lake Syozi, Kai	−	+	−	2
54	Gotenniwa, Mt. Fuji	−	+	−	2
55	1-gôme, Huzi-hunatu-guti	−	+	−	2
56	2-gôme, Huzi-ômiya-guti	−	+	−	2
57	1-gôme, Huzi-subashiri-guti	−	+	−	2
58	Lake Yamanaka, Mt. Huzi	−	+	−	2
59	Lake Yamanaka, Mt. Huzi	−	+	−	2
60	Lake Yamanaka, Mt. Huzi	−	+	−	2
61	Yamanaka-zyuku, Mt. Huzi	−	+	−	2
62	Yamanaka-zyuku, Mt. Huzi	−	+	−	2
63	Yamanaka-zyuku, Mt. Huzi	−	+	−	2

64	Yamanaka-zyuku, Mt. Huzi	(i)	—	+	+	4
		(ii)	—	+	—	6
65	Yamanaka-zyuku, Mt. Huzi		—	+	—	2
66	Hirano, near Lake Yamanaka		+	+	—	8
67	Mt. Kobushi, Titibu		—(?)	+	—	5
68	Nobeyama, Shinano		—	+	—	2
69	Sekikawa, Shinano		—	+	—	4
70	Nakabusa Hot Spring, Shinano		—	+	—	2
71	Shirahone Hot Spring, Shinano		—	+	—	2
72	Mt. Norikura, Shinano		—	+	—	2
73	Mt. Norikura, Shinano		—	+	—	2
74	Mt. Norikura, Shinano		—	+	—	2
75	Mt. Norikura, Shinano		—	+	—	2
76	Sanpuku Pass, Shinano		—(?)	+	—	2
77	Mt. Koma, Shinano		—	+	—	2
78	Mt. Nishi-koma, Shinano		—	+	—	2
79	Sasagamine, Etigo		—	+	—	2
80	Magawa, Ettyu		—	+	—	2
81	Mt. Taro, Ettyu		—	+	—	2
82	Mt. Haku-san, Hida		—	+	—	2
83	Mt. Horaizi, Mikawa	(i)	+	—	—	1
		(ii)	—	+	—	5
84	Mt. Gozaisyo-dake, Ise		—	+	—	2
85	Mt. Ibuki, Oomi		—	+	—	2
86	Mt. Ibuki, Oomi		—	+	—	2
87	Mt. Oomine, Yamato	(i)	+	+	—	5
		(ii)	—	+	—	7
88	Mt. Oomine, Yamato		—	+	—	2
89	Mt. Oomine, Sanzyo-ga-take, Yamato		—	+	—	2
90	Dorogawa, Yamato		—	+	—	2
91	Mt. Oodaigahara, Yamato		—	+	—	2
92	Mt. Kôya, Kii		—	+	—	2
93	Mt. Kôya, Kii		—	+	—	1
94	Mt. Kôya, Kii		—	+	—	1
95	Mt. Kôya, Kii		—	+	—	2
96	Kashiwabara-mura, Tanba		—	+	—	2
97	Dôzyô-mura, Settu		+	—	+	10
98	Dôzyô-mura, Settu		—	+	—	2

99	Mt. Misumi, Inaba	+	–	–	1
100	Sandan-kyo, Aki	+	–	–	1
101	Mt. Kamakurazi, Aki	+	–	–	3
102	Kankakei, Shôdo-shima	–	+	–	2
103	Kankakei, Shôdo-shima	(i) +	–	–	1
		(ii) –	+	–	7
		(iii) –	–	+	3
		(IV)+	–	+	3
104	Kankakei, Shôdo-shima	–	+	–	2
105	Mt. Kenzan, Awa-Shikoku	–	+	–	3
106	Mt. Kenzan, Awa-Shikoku	–	+	–	2
107	Mt. Kenzan, Awa-Shikoku	–	+	–	2
108	Sawadani-mura, Awa-Shikoku	+	+	–	3
		–	+	–	7
109	Mt. Ishizuti, Iyo-Shikoku	–	+	–	2
110	Nametoko, Iyo-Shikoku	–	+	–	2
111	Mt. Shiragami, Tosa-Shikoku	–	+	–	2
112	Mt. Hikosan, Buzen-Kyusyu	–	+	–	2
113	Iida, Bungo-Kyusyu	–	+	–	2
114	Mt. Unzen-dake, Kyusyu	–	+	–	3
115	Mt. Nanatu-dake, Hukue zima, Kyusyu	–	+	–	2
116	from Tokyo market	–	–	+	1
	(Formosa)				
117	Mt. Arisan, Formosa	–	+	–	2
118	Mt. Arisan, Formosa	–	+	–	2
119	Mt. Taihei, Formosa	–	+	–	3
	(Corea)				
120	Kantiin, Corea	–	+	–	3
121	Taihyori, Corea	–	+	–	3
122	Hakugan, Corea	–	+	–	2
123	from Drug shop in Seoul, Corea	–	+	–	2
	(Manchuria and China)				
124	Manchurian frontier of Northern Corea	–	+	–	2
125	Manchurian frontier of Northern Corea	–	+	–	1
126	Manchurian frontier of Northern Corea	–	+	–	3
127	Manchurian frontier of Northern Corea	–	+	–	2
128	Lushan, China	–	+	–	1

検討総個体数……………………………………………………………455 点

内　　訳

主に Diffractic acid を含むもの……………………………………355 点 (78%)

主に Barbatic acid を含むもの …………………………………… 38 点 (8%)

Barbatic acid 及び Diffractic acid を含むもの ………………… 26 点 (6%)

Barbatic acid 及び針状晶を含むもの…………………………… 13 点 (3%)

Diffractic acid 及び針状晶を含むもの ………………………… 19 点 (4%)

針状晶のみを含むもの ……………………………………………… 4 点 (1%)

○コウヤマキ型分布の化石例（前川文夫） Fumio MAEKAWA: *Disanthus* as a paleontological verification for *Sciadopitys*-type distribution.

私は本誌 **32**: 65 (1957) でコウヤマキの異様な不連続分布を地史的なまた種分化的な過程の一断面として見るべきことを述べ，磐城山地における現在のコウヤマキの如き小地域の残存は失われ易いからそれから変成した例は他の属種に期待できる事も併せてのべた，それと判定しうる例がもうみつかつたので次にのべる。それはマルバノキ (*Disanthus cercidifolius* Maxim.) であつて，これの葉が磐城山地の東南足に拡がる会津亜炭田の藤峠層(上部中新世～下部鮮新世)から発見された。場所は福島県耶麻郡山都町白小沢で，報告者は福島大学の鈴木敬治氏（日本古生物学会紀事 N. S. No. 29: 168-171. pl. 25 (1958)）である。ただ同氏はこの葉を，欧，亜，米に分散孤立したマメ科のハナズオウ属と考え *Cercis Endoi* Suzuki とされたが，，図版の写真をよくみると，中脈の上半に不規則な蛇行がみられること，葉縁に不明瞭なうねりがあること，主要五脈の左右最外見脈の脚が直角より明らかにせまいことなどは *Cercis* にあてるよりも *Disanthus* に当てるべきであることを示していると判断する。この同定に従えば，マルバノキは私の上記報文中に記した D 型に現在なつているが（同種は木曽谷から西，山陽及四国にわたつて分布する），少くとも鮮新世初期には C 型であつたことがわかり，磐越山地の種分化的意義をさぐる上に新らしい手掛りとなるといえよう。

Fossil leaves of *Disanthus*, Hamamellidaceous monotypic genus from western Japan was newly found from lignite bed in Fukushima Pref., northern Japan. The strata belongs to Upper Miocene or to lowest Pliocene. Therefore it may be suspected that the genus had, at least in Miocene, the same pattern of distribution with that of recent *Sciadopitys*.

Iwao HINO* and Ken KATUMOTO*: On *Chaetopatella*, a New Genus of the Excipulaceae

日野 巖*・勝本 謙*: 新属キイトパテラについて

The writers described in 1954 a species of bambusicolous fungi belonging to the family Excipulaceae, and provisionally named it as *Heteropatella setulosa* Hino et Katumoto. They were, however, somewhat unsatisfied with their own conclusion to include the fungus in the genus *Heteropatella*, and since then they have had hard work to determine the proper systematic position of this fungus. Recently they had fortunately the satisfaction of the matter having settled favourably, for two specimens of similar fungi belonging to the Excipulaceae were sent to the writers. The one was found on the culms of *Sasa kurilensis* Makino et Shibata collected by Mr. Hiroshi Muroi in Akita Prefecture, and the other was found on the leaf-sheathes of *Pleioblastus hindsii* Nakai collected by Mr. Huzio Katō in Miyazaki Prefecture.

These three species of fungi above mentioned are in high similarity in pycnidia and conidiospores, and the writers at length arrived at the conclusion that these fungi were to be included in a new genus of the Excipulaceae in view of the results so far achieved.

Morphology of the fungi

The fungus collected by Mr. H. Muroi is parasitic on the twigs of *Sasa kurilensis* Makino et Shibata on Nyūtōzan in Ugo Province. The pycnidia are scattered on the culms as blackish conic pustules in appearance, without a stroma, solitary, sparse or sometimes slightly gregarious, superficial, at first coniform, later dish-like in form by opening at the apex or rarely opening widely 350–500μ in diameter at the basal portion and 250–350μ in height. The contexture of the pycnidia is pseudoparenchymatous, blackish-brown, subcoriaceous and 15–25μ in thickness. The bristles are densely cespitose on the upper surface of the pycnidia, linear, simple, erect, continuous, obtuse at the apex, fuscous or blackish-brown and $130\text{–}210 \times 3\text{–}4\mu$. The conidiophores are subcylindrical, simple, hyaline and $16.3\text{–}32.6 \times 2.5\text{–}3\mu$. The conidia are solitary at the top of the conidiophore, longvermicular, 15-septate, not constricted at the septa, obtuse, ciliated at each end, hyaline, guttate and $61.9\text{–}81.5 \times 2.6\text{–}3.0\mu$. The cilium at the apex is long thread-like, simple, hyaline and $32\text{–}47 \times 0.8\text{–}1.0\mu$,

* Laboratory of Plant Pathology, Faculty of Agriculture, University of Yamaguchi. 山口大学農学部植物病学研究室.

while the cilium at the base is short, growing laterally, simple, hyaline and 8–13×0.8–1.0μ.

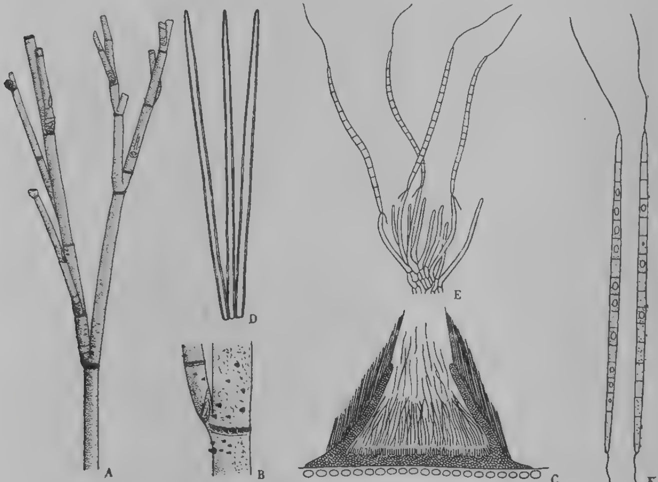


Fig. 1. *Chaetopatella longiciliata* Hino et Katumoto. A & B. pycnidia on the culms. C. pycnidium. D. setae. E. conidiophores and conidia. F. conidia (×700)

The fungus collected by Mr. H. Kato is parasitic on the decaying leaf-sheaths of *Pleioblastus hindsii* Nakai at Takaharu-tyo in Hyûga Province. The fungus is highly similar to the former species in appearance, though the latter fungs is much smaller in size of the pycnidia than the former fungus. The pycnidia are 150–240μ in diameter at the basal portion and 150–200μ in height, and the contents are measured to be 10–15μ in thickness. The bristles and the conidiophores are similar in shape to the former species. The bristles are 150–260×3–5μ and the conidiophores are 13–19×1.5–2.0μ. The conidia are solitary at the top of the conidiophore, long-vermicular, 8-septated, not constricted at the septa, obtuse or rounded, ciliated at each end, hyaline, guttate and 74.9–104.5×2.8–3.2μ. The cilia at the apex are thread-like, hyaline, typically two in number, twice-forked, frequently irregularly ramose and 5–11×0.5–0.8μ. The cilia at the base are rather short, growing laterally, two in number, frequently forked, thus having a look that the cilia are three or four in number, and 3–6×0.5–0.8μ.

The fungus formerly described by the writers as *Heteropatella setulosa* is paratitic on the dead culm of *Pleioblastus simoni* Nakai at Tyōhu-tyō in Simonoseki City

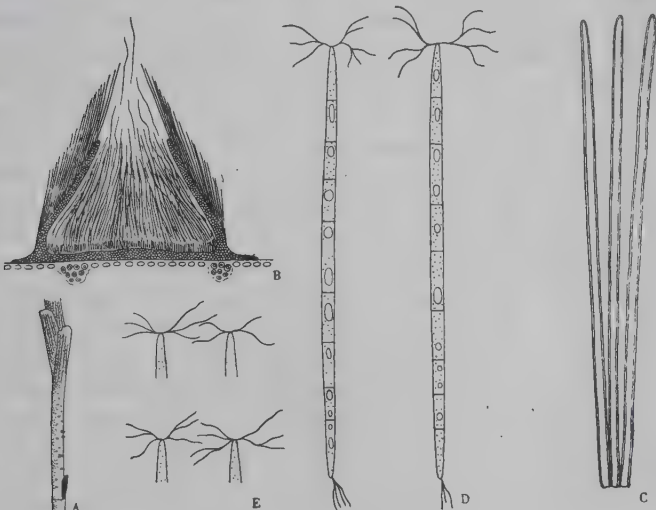


Fig. 2. *Chaetopatella coronata* Hino et Katumoto. A. pycnidia on the leaf-sheath. B. pycnidium. C. setae. D. conidia (×700). E. various forms of apical cilia.

in Nagato Province. The pycnidia are scattered, superficial, shield-like in shape, with wide opening, 0.8–2.0×1.6–1.8 mm wide at the basal portion and 90–120μ in height. The contexture of the pycnidia is pseudoparenchymatous, coriaceous at the basal portion, subcarbonaceous, rather fragile at the upper portion and blackish-brown. The bristles are densely cespitose on the upper surface of the pycnidia, linear, erect or somewhat curved, obtuse at the apex, continuous, fuliginous brown and 100–200 ×3.5–5.0μ. The conidiophores are subcylindrical, simple, hyaline and 16.4–17.8× 3.0–3.5μ. The conidia are solitary at the top of the conidiophore, varmicular, 7–12-septate, not constricted at the septa, mostly a little curved, obtuse, ciliated at each end, hyaline, guttate and 26.7–68.4×3–4μ. The cilia at both ends of conidia are thread-like, simple, hyaline and 3–4×1μ.

The former two specimens from Ugo and Hyūga Provinces seem to be closely related to each other in respects of structure and shape of pycnidia, bristles, conidio-

phores and conidia, though there are certain morphological differences between these two specimens. The fungus from Ugo Province has a conidium which is 15-septated and bears a simple cilium at each end, while the fungus from Hyūga Province has a conidium which is 8-septated and bears two forked cilia at each end. The former fungus is parasitic on the culm of the plant belonging to the genus *Sasa* and the latter fungus is on the sheath of the plant belonging to the genus *Pleioblastus*.

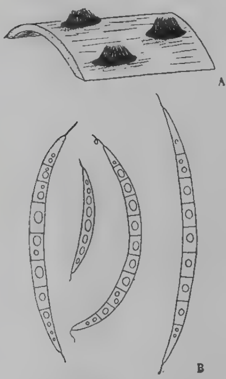


Fig. 3. ***Chaetopatella setulosa*** Hino et Katumoto. A. pycnidia. B. conidia (×700).

As for *Heteropatella setulosa* the upper portion of the subcarbonaceous pycnidia is rather fragile and apt to crumble. The pycnidium then becomes widely open at the mouth, and a dish-like portion alone is left at last. The pycnidium of this fungus is three to five times larger in size than the other two fungi, and the appearance of the pycnidia gives us an impression that the fungus is pretty different from the former two fungi. Notwithstanding such a dissimilarity in appearance, the pycnidium of this fungus seems to be essentially similar to the pycnidia of the others in structure and character of the bristles which are situated on the upper surface of the pycnidia. The conidiophores and conidia are highly in much similarity; the conidia of *Heteropatella setulosa* are also pluriseptated and ciliated at each end, though the spores are mostly curved and the cilia are rather short and indistinct.

This fungus seems to be included in the same genus to which the former two fungi are to be belonged.

Taxonomical discussion on the fungi

The pycnidia of these fungi in question are superficial, and have well-developed basal and upper portions. They are at first coniform, then scutellate, and later become dish-like with wide opening at apical portion. The contexture of pycnidia is coriaceous or occasionally subcarbonaceous in part, and is never freshy nor radial in structure. These characters of pycnidia undoubtedly indicate that these fungi all belong to the family Excipulaceae.

Several genera belonging to Excipulaceae are known to have setose or hairly

pycnidia. The genera, *Dinemasporium*, *Polynema*, *Stauronema*, *Amerosporium* and *Xenopeltis*, have superficial pycnidia and conidia which are continuous and oblong or fusiform in shape, though the former three have ciliated conidia. The conidia of the genus *Stauronema* have cruciate cilia, and those of the genera *Ypsilonia* and *Excipularia* are pluriseptated, oblong to fusiform in shape and have no cilia. The pycnidia of the genus *Pseudolachnea* are innate-erumpent and somewhat similar to those of the fungi in question, though the conidia of the former are 2-celled. The conidia of the genera *Excipularia* and *Dinemasporium* are ciliated, and the pycnidia are glabrous and innate-erumpent. As for the pycnidia of the genus *Heteropatella* they are glabrous, and have a little elongated conidia, though the shape of pycnidia and the cilia of conidia are somewhat similar to those of the fungi in question. The genus *Septopatella* has glabrous pycnidia and nonciliated conidia, though the pycnidia are entirely superficial.

After the consideration on the morphological characters of the fungi in question and also on the comparison with the known genera of Excipulaceae, the writers wish to establish a new genus, *Chaetopatella*, for the fungi newly found.

The principal characters of *Chaetopatella* and some other related genera of Excipulaceae are briefly tabulated as follows:

	Pycnidia	Conidia
Dinemasporium Lév	superficial, setose, discoid	continuous, fusiform or somewhat allantoid, 1-ciliate at each end
Polynema Lév.	superficial, setose, discoid	continuous, fusiform, 4 (or more)-ciliate at apex
Heteropatella Fckl.	superficial, glabrous, scutellate	continuous to pluriseptate, oblong to fusoid, long-ciliate at apex, short-ciliate at base
Pseudolachnea Ranoj.	erumpent, setose, discoid	2-celled, oblong to fusiform, 1-ciliate at each end
Excipulina Sacc.	superficial, hairly, discoid	pluriseptate, long-fusiform, without appendages, sometimes prolonged into subulate beak at apex
Excipularia Sacc.	stperficial, hairly, discoid or cupulate	pluriseptate, fusiform, without appendages
Septopatella Petrak	superficial, glabrous, scutellate	continuous, filiform, without appendages
Chaetopatella Hino et Katumoto	superficial, setose, scutellate to discoid	pluriseptate, vermicular, 1-2-ciliate at each end

The genus *Chaetopatella* seems to be closely related to the genus *Heteropatella*,[1] but it differs from the latter by having setose pycnidia. It is scarcely related to the genus *Septopatella*, as the setose character of pycnidia is an important mark for the classification of imperfect fungi. The conidial formation of the *Septopatella* fungi is quite distinct from the fungi of other genera, and that of *Chaetopatella* fungi is fairly simple.

Technical description in Latin

The diagnosis of the new genus *Chaetopatella* established by the writers is given as follows:

Chaetopatella Hino et Katumoto, gen. nov.

Pycnidiis astromatis, sparsis vel subgregariis, superficialibus, solitariis, setulosis, coniculis dein scutellari- vel disciformibus; contextu subcoriaceo, pseudoparenchymatico, atro-brunneo; setulis super pycnidio dense cespitosis, linearibus, simplicibus, fusco-brunneis vel atro-brunneis; conidiophoris basilaris, subcylindraceis, simplicibus, hyalinis, conidiosporis acrogenis, solitariis, longi vermiculariformibus, apice utrinque obtusis vel rotundatis, 1–2-ciliatis, multiseptatis, hyalinis, guttatis; ciliis filiformibus, simplicibus vel furcatis, hyalinis.

Typus: *Chaetopatella longiciliata* Hino et Katumoto.

The description in Latin of the fungi belonging to the genus *Chaetopatella* is as follows:

1. **Cheatopatella longiciliata** Hino et Katumoto, spec. nov.

Pycnidiis culmicolis, sparsis vel subgregariis, solitariis, superficialibus, primum coniculis, dein scutellariformibus vel disciformibus, ad basim 350–500μ latis, 250–350μ altis; contextu subcoriaceo, pseudoparenchymatico, atro-brunneo, 15–25μ crasso; setulis super pycnidio dense cespitosis, numerosis, linealibus, simplicibus, rectis, continuis, apice obtusis, fusco-brunneis vel atro-brunneis, 130–210$\times$3–4μ; conidiophoris basilaris, subcylindraceis, simplicibus, apice obtusis vel rotundatis, hyalinis, 16.3–32.6$\times$2.5–3.0μ; conidiosporis acrogenis, solitariis, longe vermiculariformibus, apice utrinque obtusis et ciliatis, 15-septatis, non constrictis, hyalinis, guttatis, 61.9–81.5$\times$2.6–3.0μ; ciliis apicalis longis, filiformibus, simplicibus, hyalinis, 32–47$\times$0.8–1.0μ; ciliis basilaris lateralis, brivioribus, filiformibus, simplicibus, hyalinis, 8–13$\times$0.8–1.0μ.

Hab. in culmis *Sasae kurilensis* (Nemagaritake). Mt. Nyūtōzan, Prov. Ugo, Japonia (Aug. 4, 1957. H. Muroi—Typus in Herb. Fac. Agr. Univ. Yamaguti).

2. **Chaetopatella coronata** Hino et Katumoto, spec. nov.

Pycnidiis sparsis vel subgregariis, solitariis, superficialibus, primum coniculis, dein scutellariformibus vel disciformibus, ad basim 150–240μ latis, 150–200μ altis; contextu subcoriaceo, pseudoparenchymatico, atro-brunneo, 10–15μ crasso; setulis super pycnidio dense cespitosis, numerosis, linearibus, simplicibus, rectis, continuis, apice obtusis, fusco-brunneis vel atro-brunneis, 150–260×3–5μ; conidiophoris basilaris, subcylindraceis, simplicibus, apice obtusis vel rotundatis, hyalinis, 13–19×1.5–2.0μ; conidiosporis acrogenis, solitariis, longe vermicuraliformibus, apice utrinque obtusis vel rotundatis et 2-ciliatis, 8-septatis, non constrictis, hyalinis, guttatis, 74.9–104.5×2.8–3.2μ; ciliis apicalis filiformibus, typice dichotomice furcatis, sed frequenter irregulariter ramosis, hyalinis, 5–11×0.5–0.8μ ciliis basilaris lateralis, plerumque ramosis, 3–6×0.5–0.8μ.

Hab. in vaginis foliorum putrescentibus *Pleioblasti hindsii* (Kanzantiku). Takaharu-tyō, Pro. Hyūga, Japonia (Maius 10, 1958. H. Katō—Typus in Herb. Fac. Agr. Univ. Yamaguti).

3. **Chaetopatella setulosa** (Hino et Katumoto) Hino et Katumoto, comb. nov.

Syn. *Heteropatella setulosa* Hino et Katumoto in Bull. Fac. Agr. Univ. Yamaguti, No. 5, p. 234, 1954.

Hab. iu culmis emortuis *Pleioblasti simoni* (Medake). Tyōhu in Simonoseki, Prov. Nagato, Japonia (Martius 31, 1954. K. Katumoto—Typus in Herb. Fac. Agr. Univ. Yamaguti); Oomizima, Prov. Nagato, Japonia (Julius 26, 1954. K. Katumoto).

今堀宏三*・須賀瑛文**: 木崎湖におけるシャジクモ群落の分布とその遷移(予報)***

Kozo IMAHORI* and Hidefumi SUGA**: Preliminary note on the succession and distribution of Characeae in the Lake Kizaki, Japan.***

シャジクモ群落が長期にわたつてどのように変化していくかということは，今日まで日本ではもちろん諸外国でも全く研究されていない。さいわい，木崎湖の水生植物群落について中野博士[5]の詳細な研究が残されている。筆者等は 30 年をへた今日木崎湖のシャジクモ群落が，どのように遷移をしているかを見きわめたいと思い，1956 年 10 月 26 日～29 日および 57 年 8 月 6 日～9 日の 2 回にわたつて調査した。調査資料がかなり多量になつたため，詳細はいずれ改めて報告することにして，ここではその要点をまとめたい。



Fig. 1. Kizaki-lake Development of Chara zone from 1927 to 1956. Numbers indicate the investigated Stations.

木崎湖中，代表的な植相を示すと考えられる 8 つの地域 (Station 1～8) を選び，(Fig. 1.) それぞれ垂直分布を Belt transect method によりしらべ，同時にその Ecological

* Bot. Inst., Faculty of science, Kanazawa Univ. 金沢大学・理・植物学教室.
** Azuma Lower Secondary School, Nagoya. 名古屋市立あずま中学校.
*** Contribution from the Laboratory of Systematic Botany, Faculty of Science, Kanazawa Univ. No. 26.

factors を測定した。すなわち，特製採集用いかり[3]をボート上から dredge して，植相と土壌のありさまを，また転倒温度計をとりつけた Beckman 式採水器を用いて水温および pH の水平分布を調査した。なお，pH 測定には S. Z. K 式比色測定器を使用した。

採集したシャジクモ類は次の 2 属 3 種で **1 新種**を含む。

（1） *Chara Braunii* Gmelin シャジクモ　後に述べるように湖中にかなり広く，かつ水深 5 m を中心とした沿岸帯に生育している。多くの場合オオフラスモ *Nitella flexilis longifolia* またはマツモ *Ceratophyllum demersum* L. と混生している。

（2） *Nitella flexilis* Agardh var. *longifolia* Braun オオフラスモ　湖中全沈水植物群落の優占種で，特に水深 8～10 m 地帯の殆んどは，この純群落である。長さ 1 m 以上に大さく生育したものが多く，あたかも婦人の長髪を敷きつめたように繁茂して，いわゆる Chara bed をつくつている。(Fig. 2)



Fig. 2. *Nitella flexilis*, well developed like long hairs of lady.

（3） *N. minispora* キザキフラスモ（新種）(Fig. 3)　日本には従来，異節類 Heterodactylous species が 7 spp. 報告されているが,[3] キザキフラスモは，それらに比べてはるかに小さく，小枝の分枝回数も少なく，卵胞子が特に小さいこと，卵胞子の特有の模様などで区別できる。アフリカ産の *N. Abyssinica*[1] とは終端枝の細胞数で，インド産の *N. tuberculata*[4] とは螺旋縁数や卵胞子の大きさ，分枝回数などで区別できる。小型で第 1 分射枝の長いことは，*N. pseudoflabllata minuta*[2] と一見よく似ている。

採集のときは，湖中 1 カ所 (St. 6, Fig. 4 ×地点) の水深 2 m の地点でマツモ *Ceratophyllum demersum* L. ヒロハノエビモ *Potamogeton perfoliatus* L. var. *cordato-lanceolatus* Mertens et Koch. などと混生していた一塊が得られただけだつた。

Nitella minispora Imahori et Suga sp. nov.,—1956, K. I. No. 1398 (Type specimen in Kanazawa Univ.)

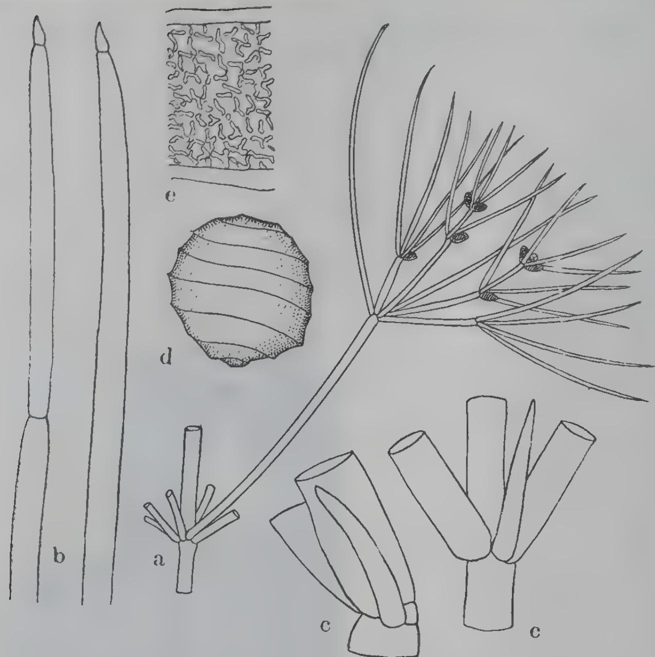


Fig. 3. ***N. minispora*** Imahori et Suga a: Branchlet ×10. b: Dactyls, 2~3 celled. ×40. c: A aranchlet nodes, showing one-celled dactyls ×120. d: Oospore ×120. e: Oospore membrane ×800.

Planta monoecia, pulva, ad 6 cm. alta, claro viridis. Caulis tenuis sed erectus, 150–180 μ crassus, cum 4–5 verticillis. Internodia in partibus inferioribus quam ramuli 2–3-plo longiora, in partibus superioribus equilongiora. Verticillorum ramuli sterilium eis fertilium similes, ramuli normaliter 6, rigidi, 5–7 mm. longi et 1–3-tim (plerumque 2-tim) furcati; radii primarii ca 1/2 longitudinem ramulis aequales, 120–140 μ crassus; radii secundarii normaliter 6, 70–90 μ crassus, raro simplici; radii tertiarii 3–4, quorum 1–2 iterum in radis quaternariis furcati sunt. Dactyli 3, vulgo 2–3-cellulati et elongati, cellula ultima acuta, 55–100 μ longa et basi 22–27 μ lata, sed raro abbreviati unicellulati dactyli sunt; dactyli unicellulati 95–250 μ longi et ca. 30 μ lata, spiculata vel allantoidea.

♀ et ♂ gametangia ad nodos secundarii et tertiarii, non ad primarii sunt, solitaria vel conjuncta. Antheridia stipitata, 130–150 μ diametro. Oogonia solitaria vel geminata, sessilia. 330–350 μ longa et 250–280 μ lata; cellula spiralis 8–9 convolutas exhibentes; coronula intermedia, persistens, cellula inferior 10–14 μ alta, cellula superior 15–19 μ alta, et basi 41 μ lata. Oospora pallida brunnea, subglobosa, 220–235 μ longa et 210–220 μ lata; iugis 6–7; membrana inchoata reticulata vel vermiculari tuberculata.

Hab.: lacu Kizaki, Kita-Azumigun, Nagano Pref., Honsyu, Japan (in lake, pH 7.1. ca. 2 m. depth of 765 m. sea level lake, leg. Imahori et Suga, Oct. 27.

Distr.: endemic to Japan.

これらシャジクモ群落の水平・垂直分布をみると，Fig. 1 で示すように 1927 年に比べて，はるかに群落が発達している。特に東岸側が西岸側に比べて，はるかによく発達していることはその側の傾斜がゆるやかで，生育に適当な深度の巾が広いこと，湖底がシャジクモの生育に適当な泥質であることなど，topographic および edaphic factor のはたらきによると考えられる。

中野氏によれば，当時シャジクモ帯 *Chara* zone として認められたものは，わずかに St. 3 附近で「深さ 11.5～13 m の間に微弱ながら存在するらしい」とあるが，1956 年では (Fig. 1) 明らかな *Chara* zone が発達し，かつその深度が 5～8 m (Fig. 5) と次第に浅くなっている。

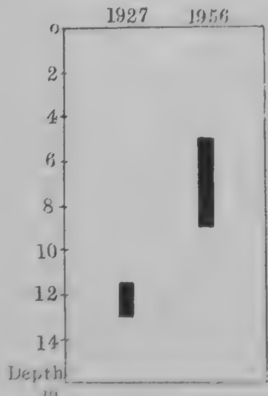


Fig. 4. Vertical distribution of *Chara* zone in 1927 and 1956. (St. 3)

C) pH および水温の変化をみると pH は水深 0～12 m はあまりいちじるしい変化がなく，そのため pH と群落の関係を論ずるまでの結果は得られなかつた。水温は Tab. に示すように水深 6～8 m で最高を示しており，その深度がちようど *Chara* zone の中心と一致していることは注目すべきであろう。

以上のようにシャジクモ帯は 30 年間にいちじるしく発達したばかりでなく，次第に浅い方に移動した。この原因のすべてを今ここで明らかにするまでにはいたらないが，その一つとして透明度の低下が考えられる。田中氏によれば 1929 年 5.31 m の透明度が，1956 年 4.95 m に低下し，1957 年須賀の観測では 3～4 m となつている。このような透明度の低下のため，沈水植物の分布の下限をせばめ，ために それらは次第に浅い方へ移行してきた。また湖岸の水草帯植物群に よ

Table　Vertical distribution, temperature and pH at station 6. (1956)

Depth (m)	W. temp. (°C)	pH
0	13.8	7.1
1	13.8	6.9
2	13.8	6.9
3	14.0	6.9
4	14.0	6.9
5	14.0	7.0
6	14.2	7.0
7	14.2	7.0
8	14.3	7.0
9	14.0	6.9
10	13.5	6.8
11	13.5	6.8
12	13.4	6.8
13	12.5	6.5
14	11.6	6.2

り，湖底，湖盆の有機栄養が増加したか，特に湖底の富栄養地帯と好適温度地帯との一致によって，フラスモにとっては生育上もっとも好条件にめぐまれ，加えて受光量の不足は他の沈水植物との競争において，フラスモに幸して，このようないちじるしい *Chara* bed が発達したと考えられよう。

30 年をへた後にただ 2 回の調査だけで最初の目的はとうてい達せられないが，とにかくここで長期遷移のありさまの一端をつかむことができた。これらのデーターを足がかりとして，さらに継続調査をすすめ，一層完全なものとしたい。

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Summary

1. 8 species of Charophytes, including 1 new species belonging to the 'Heterodactylae' were collected in Kizaki-ko, which is one of the typical mesotrophic lakes in Japan.

2. The first study of this lake was made by Dr. Harufusa Nakano, who found only very poor characeous vegetation at "station 6."

3. During 30 years, characeous vegetation developed well in a wide area of the lake, mainly on the eastern side.

4. The depth of the *chara* zone is getting shallower.

5. Decrease of transparency of water and increase of neutral humic sediments was advantageous to *Chara* beds which are successful competitors.

6. More research is required to make complete the present study.

Zennoske IWATSUKI*: **Two interesting *Fissidens* species common to Japan and eastern North America****

岩月善之助*: 日本及び米国東部に共通の *Fissidens* の 2 種**

Among the mosses common to eastern Asia and eastern North America with a disjunct geographical range, there are *Homaliadelphus* and others (Iwatsuki 1958 a). As a matter of fact, about ten per cent of the Southern Apparatian mosses are either recorded only from eastern North America and eastern Asia, or are related to Asiatic species (Iwatsuki, 1958 b).

Additional examples of species taking this distribution are two rare species of *Fissidens*. These examples of mosses support Asa Gray's opinion of the similarity of the floras of Asia and eastern United States.

The author is indebted to Dr. D. Keck (New York Botanical Garden), Dr. O. E. Jennings (Osborn Laboratory), Dr. W. H. Welch (Depauw University), Dr. K. Sakurai (Kyoritsu Pharmaceutical University) and Mrs. U. Mizushima (Tokyo) for their courtesies and for access to many authentic specimens. Thanks are due Dr. A. J. Sharp (University of Tennessee) and Dr. L. F. Koch (University of Illinois) for their suggestions and help with the study.

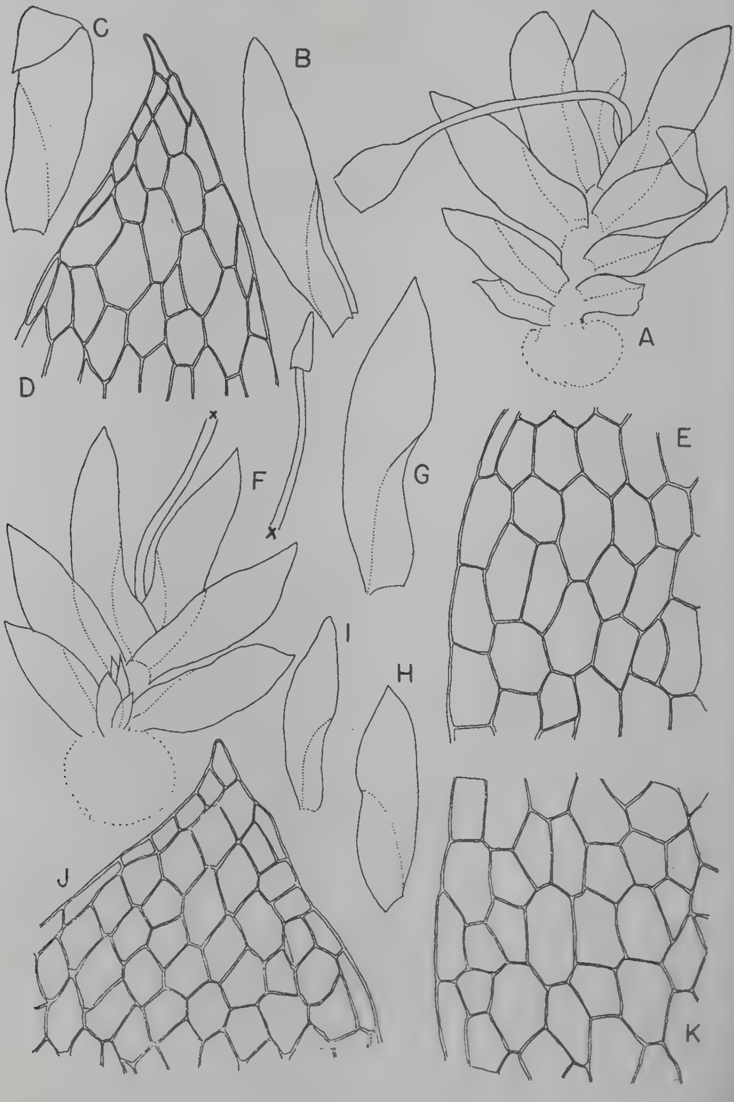
1. **Fissidens hyalinus** Hooker and Wilson.

This species is extremely rare and has been recorded in eastern United States from only two localities, Pennsylvania and Ohio. The Japanese plants were described under the name *F. satsumensis* Sakurai from Kagoshima, Kyushu, and recorded from Chiba, Honshu. They have characteristic phyllids belonging in the subgenus *Polypodiopsis*. These are ecostate and composed of large, hyaline cells. The descriptions of *F. hyalinus* (Grout, 1936 and Jennings, 1951) and *F. satsumensis* (Sakurai, 1933) are essentially the same except as follows: (1) The American plants are taller (2–4 mm) than the Japanese plants (1–1.3 mm). (2) The phyllidial margins of American plants are bordered by a single row of narrow elongate cells while those of the Japanese plants are only partly bordered. (3) Oblong or oblong-ovoid (U.S.A.) versus ovoid (Japan) thecae.

However, the phyllids of the type specimen and Pennsylvanian plants of *F. hyalinus* are not clearly bordered as in the original description, but are weakly and

* The Hattori Botanical Laboratory, Nichinan, Japan. 服部植物研究所.

** Contribution from the Botanical Laboratory, The University of Tennessee, N. Ser. no. 189, and from the Hattori Botanical Laboratory.



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partly bordered just as in the Japanese specimen. In the most cases the phyllidial tips are not bordered. The Japanese plants also have slightly smaller cells (25–55μ long, 19–30μ wide in the upper half of the phyllids) than those of the American plants (34–57μ long, 22–34μ wide). The habitats in both regions are quite similar, such as moist, rocky ledges; on ground or bank in shady ravines.

After careful examination of the descriptions and type specimens, I believe that these plants all belong to the same species, *F. hyalinus*. Another species, *Fissidens*

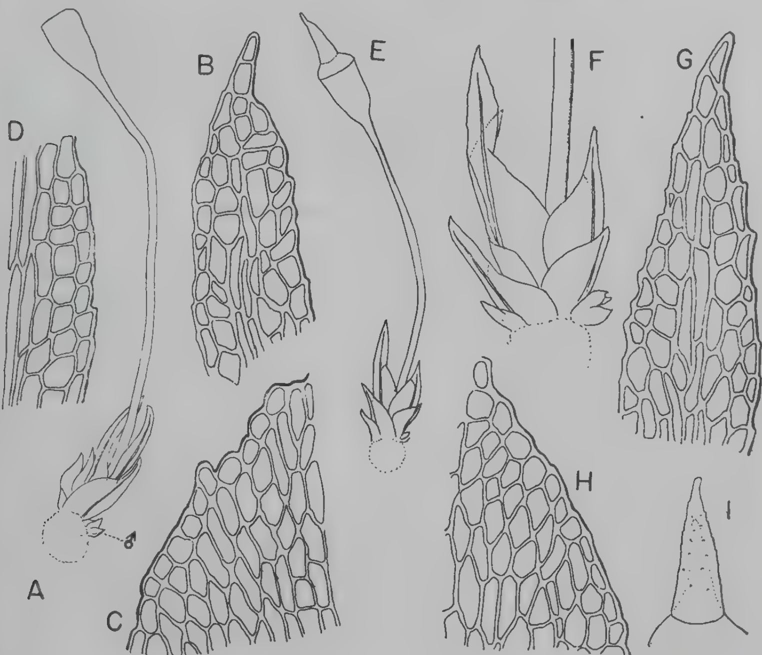


Fig. 2. *Fissidens closteri* Aust. A-D. Subspecies *kiushiuensis* (Sak.) Iwatsuki from Japan. E-I. Subsp. *closteri* from Closter, U.S.A. (Austin, 479). A, E. Plants, ×33. B, G. Areolations at phyllidial tips, ×385. C, H. Areolations at vaginant lamina, ×385. D. Areolation at middle part of phyllid, ×385. F. Plant, ×90. I. Calyptra, 90.

Fig. 1. *Fissidens hyalinus* Hook. et Wilson. A-E. Isotype specimen of *F. satsumensis* Sak. from Japan. F-K. From Pennsylvania (Jennings, 10402). A, F. Plants, ×20. B, C, G, H, I. Phyllids, ×33. D, J. Areolation at phyllidial tips, ×237. E, K. Areolation at middle part of phyllids, ×237.

nymani (Fl.) Paris from Java, seems quite similar to this species.

Fissidens hyalinus Hooker and Wilson. Journ. Bot. **3** : 89. 1841. Syn. *Fissidens satsumensis* Sakurai, Bot. Mag. Tokyo **47** : 735. 1933.—syn. nov. *Polypodiopsis satsumensis* (Sak.) Tuzibe, Journ. Jap. Bot. **20** : 113. 1944.

Specimens examined : U.S.A. ; Ohio-Bank Lick, on Cassidy's farm, near Cincinnati, type of *F. hyalinus* (NY). Pennsylvania—near Lock No. 4, Monongahela river, Sept. 6. 1895. *A. Linn, and J. S. Simonton* ♀ . Japan ; Kyushu—Izyuin, Kagoshima Pref., Feb. 3, 1931, *Y. Doi 499*, type of *F. satsumensis*.

2. **Fissidens closteri** Aust.

This species is very small, up to 0.5 mm in height. almost acaulescent and belongs in the subgenus *Aloma*. New Jersey Rhode Island, Indiana and Puerto Rico are the known localities of this minute rare moss which hardly can be seen with the nacked eye in the field. In the Herbarium of New York Botanical Garden there is a note written by Mrs. E. G. Britton. She compared *F. closteri* with *F. pauperculus* from California, and pointed out many differences between these two taxa. However, another closely related species has been found from a few localities in central to southern Japan under the name *F. kiushiuensis* Sakurai (Sakurai, 1933 ; Higuchi, 1953). The latter was compared with *F. crassinervis* S. Lac. from tropical Asia in the original description. *F. kiushiuensis* has characteristics similar to those of *F. closteri*. A careful comparison of the descriptions of the two species (Grout, 1936 ; Welch 1957 and Sakurai, 1933) showed the following differences :

	Fissidens closteri	*F. kiushiuensis*
Height	up to 0.5 mm	0.2 mm (caulid)
Number of phyllids	2–3 pairs	3–5 pairs
Size of upper phyllids	0.4–0.6 mm long	0.5–0.7 mm
Margin of phyllids	Entire or faintly crenulate with projecting cell angles to wavy	Crenulate all the way
Calyptra	2.5 mm long	0.02 mm long
Length of seta	1.75–2.5 mm	0.8–1.0 mm
Length of theca	0.25–0.4 mm	0.15 mm
Size of spores	8–12μ in diam	15μ

In addition to the above, the descriptions indicate that the caulid of *Fissidens closteli* has no central strand ; its median phyllidial cells are 8–18μ long, about 7μ wide ; and it is monoicous or pseudodioicous. The calyptra of *F. kiushiuensis* is weakly mammillose above.

An examination of the available specimens of the two species, including the types

(located in the herbaria of the New York Botanical Garden, Dr. W. H. Welch, and Dr. K. Sakurai) proved that the above distinctions are obscure, and that these species are essentially the same. The gametophores are similar in form and size. *F. kiushiuensis* has 2–3 pairs of phyllids excluding the perigonium which is attached to the base of the caulid as in *F. closteri*. Margins of the phyllids of both species are faintly crenulate. The size of the apical cells are the same (12–20μ long, 9–12μ wide). The length of the seta is very variable: in *F. closteri* (1.2–2.5 mm); and in *F. kiushiuensis* (0.8–3.0 mm). I examined some calyptrae in the type specimen of *F. closteri*, and found that some of them are also mammillose toward the tip as shown in *F. kiushiuensis*. No difference was found in the size of the calyptra, thecae or spores of the two species.

However, the length of uppermost phyllids of *F. kiushiuensis* (0.6–1.0 mm) is longer and more slender than that of *F. closteri* (0.4–0.7 mm). Considering this difference and their disjunct distribution, I propose the following combinations.

Fissidens closteri Aust., Bull. Torr. Bot. Club **5**: 21. 1874. subsp. **closteri**

Specimens examined: U.S.A.; New Jersey—near Closter, 1865, *Austin*—holotype (NY), Aug. 12, 1872 (NY), 1875 (NY) and Musci Appalachiani, Suppl. 1, no. 479 (NY) from same place by Austin. Indiana—Montgomery Co., Oct. 16, 1938, W. H. Welch.

subsp. **kiushiuensis** (Sakurai) Iwatsuki, stat. nov.

Syn. *Fissidens kiushiuensis* Sakurai, Bot. Mag. Tokyo **47**: 741. 1933.

Specimens examined: Japan; Kyushu-Izyuin, Kagoshima Pref., Jan. 27, 1931, T. Doi 492—holotype. Udo Shrine, Miyazaki Pref., Feb. 25, 1956, Z. Iwatsuki and M. Mizutani 29150 (NICH). Honshu -Mt. Odaigahara, Mie Pref., April 3, 1954, Z. Iwatsuki 27820 (NICH). Iizaka, Fukushima Pref., Sept. 17, 1952, T. Higuchi 766.

The habitats of two subspecies are also similar, *e. g.*, in crevices of decomposing rock; on rock in stream bed, or on small boulder on the forest floor.

The known range of these two species shows the typical disjunct distribution in Japan and eastern United States. Most of the Japanese mosses described or reported previously were compared more thoroughly with their related taxa in Europe. It seems probable that many of the mosses now thought to be endemic to Japan (or Asia) and North America were described without through comparison. On the other hand some of the common species reported previously from both these regions might be separated after critical study. For example, J. Cardot described a new variety

of Asiatic *Thuidium glaucium* (var. *ludovicianum*, from Florida, in 1905). However, this variety is now included in *T. alleni*, an endemic of eastern United States.

Recently some American bryophytes were described as new to science after thorough comparison with Asiatic plants. They are *Mnium carolinianum* Anderson (compared with *M. maximowiczii*), *Diphyscium cumberlandianum* Harvey (compared with *D. involutum*), and *Plagiochila yokogurensis* subsp. *fragilifolia* Schuster (compared with *P. yokogurensis*). I think that a more thorough comparion of these two bryophyte floras will reveal more interesting facts for plant geographers.

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Masao KITAGAWA* & Tetsuo KOYAMA**: **Concerning the variants of Tricyrtis macrantha Maxim.**

北川政夫*・小山鉄夫**: ジョウロウホトトギスの変異

Tricyrtis macrantha Maxim. is an elegant hardy Japanese species which grows hunging on moist rocky cliff by torrent and is unique in having a solitary flower at each axile of leaf in the upper part of pendent stem. In 1887, it was first found on Mt. Yokogura in Shikoku, the southwestern part of Japan, by Dr. Makino, and basing upon the collection, Maximowicz described it in 1888. Then it got to be known also from a few localities in the southern part of the Kii Peninsula and in one place in the province of Hyuga, Kyushu. Recently, in addition to these localities, this rare species was newly collected in two places arround Mt. Tohgatake in the Tanzawa mountain mass in eastern Honshu. This quite unexpected discovery brings this species of interesting disjunct distribution into a light.

Being considered to be rather an old species, this plant is morphologically differentiated to a considerable extent in each isolated locality. In 1935, Dr. Masamune described the plants from Kii as *T. macranthopsis*, distinguishing them from true *T. macrantha* of Shikoku by the different shape of the leaf-bases. As illustrated in Fig. 1-4, the leaf-bases of *T. macranthopsis* (B 4) embrace the stem, while in *T. macrantha* (A 4) either auricle at the cordate leafbase is distinctly on the one side of the stem. But in other characters, these two are almost alike, then the plants from Kii have recently attributed to a variety under *T. macranthopsis* by Mr. Okuyama and the junior author (1956). Because the plants from Tanzawa (Fig. 1, 5) do not quite agree with either of the two, though they are rather near to *T. macranthopsis* than to *T. macrantha*, this variant is here named *Ishiiana* in honour of its first discoverer, Mr. H. Ishii. From both kinds, it differs by the flowers disposing in a clear raceme terminating the stem. Furthermore, from *T. macranthopsis* it is distinguished in its broader spur of the outer perianth segment, longer horn-like lamellae on the inner perianth segment, and smaller size of anthers, and from *T. macrantha* by the broader spur, glabrous stem and leaves, etc. (Fig. 1, 1-3).

If the plants from Kii are regarded as a different species from *T. macrantha* itself, a specific rank should also be granted to this Tanzawa plant. We recognize

* Botanical Institute, Faculty of Liberal Art, Yokohama National University, Yokohama 横浜国立大学学芸部植物学教室.
** Botanical Institute, Faculty of Science, University of Tokyo. 東京大学理学部植物学教室.

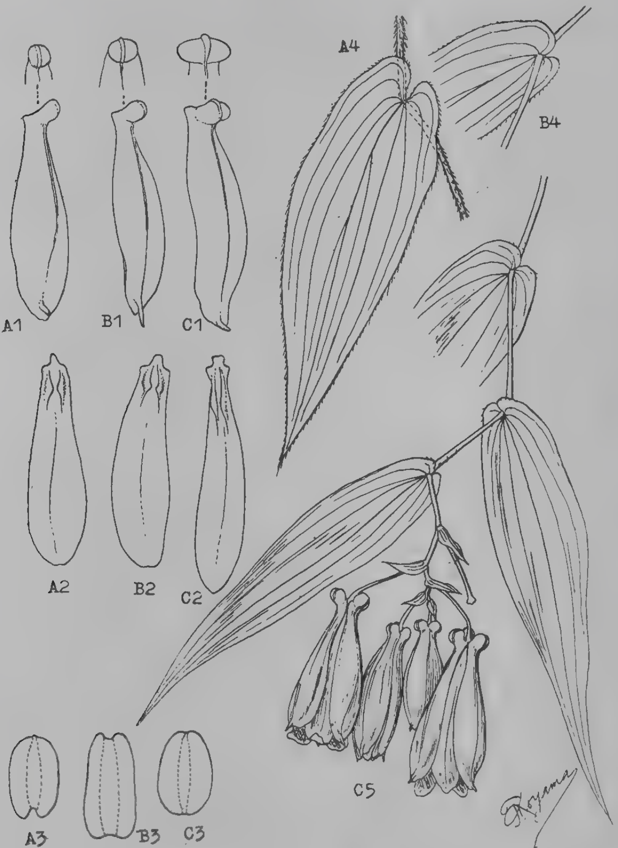


Fig. 1. **A**: *Tricyrtis macrantha* Maxim. (typical); **B**: Ditto var. *macranthopsis* Okuyama et T. Koyama; **C**: Ditto var. *Ishiiana* Kitagawa et T. Koyama—**1**: Outer perianth segment with the front view of its spur; **2**: Inner Perianth segment; **3**: Anther; **4**: Leaf with a part of stem; **5**: Upper part of stem. All except 3, ×2/3 (Icon. orig.)

all these variations as the geographical varieties under *T. macrantha*, not only for the reasons mentioned below but also for that the shape of flowers and leaves of the

three is not different enough to separate them specifically from each other. Such a peculiar base of leaf in *T. macrantha* is, as observed by Mr. Okuyama and the junior author in 1956, is restricted in well grown individuals, i. e. in small plants and in the upper part of the stem, leaves do not embrace the stem, not being cordate at their bases. The true raceme in var. *Ishiiana* is an extreme state bearing much reduced upper leaves.

It is also noteworthy that some characters tend to vary geographically. The most hairy plant is *T. macrantha* itself, which has leaves hairy on the lower surface and along the margin, and densely hispid stem. In var. *macranthopsis*, a hairy part is restricted on the margin of leaves, and then, var. *Ishiiana* is nearly glabrous. The spur of the outer perianth segment is largest in var. *Ishiiana* and smalles in *macrantha* (Fig. 1, 1 . This character is correlated with the length of the horn-like appendage inside the inner perianth segment, which is longest in var. *Ishiiana* (Fig. 1, 2). Leaves are broadest in *macrantha* and narrowest in var. *Ishiiana*.

Dr. Koidzumi created a new genus, *Brachycyrtis*, to acommodate to the present species,indicating the spur at the base of the outer tepal as the chief distinguishing point from *Tricyrtis*, the typical plant of which bears outer tepal with a sacc-like base. This character is adopted by us to separate sections in this paper.

Nomenclatorial treatments.

Tricyrtis Wallich, Tent. Fl. Nepal. **2**: 61, t. 46 (1826); Kunth, Enum. Pl. **4**: 278 (1843); Baker in Journ. Linn. Soc. **17**: 463 (1879); Bentham & Hook. fil., Gen. Pl. in Engl & Prantl, Nat. Pflanzenf. **2**(2): 27(1887); Masamune in Journ. Trop. Agr. Formosa **2**(1): 37 (1930); Ohwi, Fl. Japan 288 (1953).

Sect. **Tricyrtis**.—*T. pilosa* Wallich (Species typica), *T. hirta* Hook.; *T. macropoda* Maxim., *T. flava* Maxim., &c. pertinent.

Sect. **Brachycyrtis** (Koidz.) Kitagawa & T. Koyama, stat. nov.—Gen. *Brachycyrtis* Koidzumi in Bot. Mag. Tokyo **38**: 100 (1924)—*Tricyrtis* subgen. *Brachycyrtis* (Koidz.) Masamune in Journ. Trop. Agr. Formosa **2** (1): 39 (1930)—Sola species, *T. macrantha* Maxim. pertinet.

Tricyrtis macrantha Maxim. in Mél. Biol. **12**: 928 (1888); Makino, Illustr. Fl. Japan **1**: t. 1 (1888); Matsumura, Index Pl. Japon. **2** (1): 216 (1905); Makino & Nemoto, Fl. Japan 1283 (1929); Masamune, l. c. 39 (1930), saltem. p. p. maj.; Ohwi, Fl. Japan 289 (1953)—Japonia, Shikoku, *T. Makino* anno 1887.

Brachycyrtis macrantha (Maxim.) Koidzumi, l. c. 100 (1924).

Distrib. Japonia: Tosa & Hyuga.

var. **macranthopsis** (Masamune) Okuyama & T. Koyama ex Okuyama (Handb. Pl. Collect. t. 7. 1953, com. nuda) in Journ. Jap. Bot. **30**: **41** (1955).

T. macranthopsis Masamune in Trans. Nat. Hist. Soc. Formos. **25**: 251 (1935); Ohwi, Fl. Japan 289 (1953)—Japonia, Kii, *Matsuda* 2346.

Brachycyrtis macranthopsis (Masamune) Honda, Nomina Pl. Japon. ed. 1, 468 & 502 (1939).

Distrib. Japonia: Kii & Ise.

var. **Ishiiana** Kitagawa & T. Koyama, var. nova recedit ab utrisque supra scriptis floribus in racemo terminali dispositis, calcaribus tepalorum exterioribus magis latioribus.

Caulis 2 ad 5 dm altus; folia ablongo-ovata lanceolatave 4.5–9 cm longa 15–25 mm lata fere glabra; flores 3–5 in racemo terminale fastigiatim dispositi, bracteis ovatis ad 8 mm longis; calcares tepalorum late ovobatae 4–5 mm longae 5–6 mm latae.

Holotypus: Japonia, Prov. Sagami, monte Togatake. Leg. H. Ishii, sin. num., 2/IX/1957 (TNS).

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神奈川県丹沢山塊にジョウロウホトトギスがある。最初の発見者は石井初男氏（神奈川県本町中学校教諭）で，昨年9月に採集されたのであつたが，当時個体が少なかつた事と採集地点が唯一箇所であつたので，この植物を発表するのに不充分であつたが，其の後丹沢山地の他の地点でも同一物が見出されて，この植物に確信を持つ事が出来た。現在ジョウロウホトトギス類では，トサジョウロウホトトギスとキイジョウロウホトトギスとの2品が報告されて居るが，この丹沢の植物は花が充分に花序と言える着き方をする点と，外花被片の距が大きい点で，上のいずれとも区別されるので**サガミジョウロウホトトギス**（新称）と命名する。これら三者の区別は次の通りである。

1）花は茎の上方の葉腋に単生し，明瞭な花序の形をとらない。

　2）葉身基部の耳は両方共茎の一方の側にある。（挿図 A4 を見よ）………………トサジョウロウホトトギス *Tricyrtis macrantha* Maxim.（土佐，日向）。

　2）葉身の基部は茎を抱く。（同図 B4）………………キイジョウロウホトトギス var. *macranthopsis* Okuyama et T. Koyama（紀伊，伊勢）

1）花は明らかな総状花序をなし，稍繖房状に着く。（同図 C5）…………サガミジョウロウホトトギス var. *Ishiiana* Kitagawa et T. Koyama, var. nova

これら三者は考え方によつてはそれぞれ別種との見方も出来ようけれども，私達は欧

文欄に述べた理由から，それぞれ地理的に孤立して或程度分化した変種と見る見解を採つた。特にサガミジョウロウホトトギスで花序部が明瞭な点は興味深いが，これも葉が退化した極限と考え度い。サガミジョウロウホトトギスは今後伊豆半島辺りの溪流沿いで発見される可能性も無論あると思われる。図解と変異の測定に供した材料は総て生品と液漬標本に依つている事を附記しておき度い。

○カヤツリグサ科の3雑種（小山鉄夫） Tetsuo KOYAMA: Three natural hybrids of Cyperaceae from Japan.

1) **フトボタニガワスゲ**——タニガワスゲとヤマアゼスゲの間種で外形は殆んどヤマアゼスゲであるが，雄花穂・雌花穂共色彩が黒紫褐色であるので区別される。果胞の形は第1図に示した様に全く中間の形態をとる。ヤマアゼスゲの果胞は a 図の如く円く，甚だ短い嘴があり，表面の斑は銹色を呈する。(長さは平均 2 mm)。又，タニガワスゲの果胞は c 図の様に長い嘴があつて巾狭く，嘴が黒紫褐色を呈する以外斑も殆んどない (長さ 3.5-4 mm)。この雑種の果胞は b であるが，形はヤマアゼスゲの形質を多く受け継ぎ，嘴部と色彩はタニガワスゲと同じである。尚ヤマアゼスゲはオタルスゲ・サドスゲに雑種する例が知られ，タニガワスゲはタヌキランと掛け合わさる事が報ぜられている。この新雑種は別府の荒金正憲氏が発見されたので，種名は氏に因む。

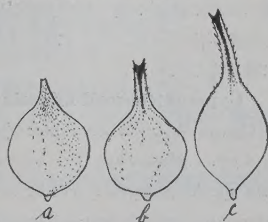


Fig. 1. Perigynia of *C. heterolepis* (a), *C. forficula* (c) & *C. Arakanei* (b), a hybrid between the former two. (all ×9). ヤマアゼスゲ (a), タニガワスゲ (c) とその間の雑種フトボタニガワスゲ (b) の果胞。

Carex×Arakanei T. Koyama, hybrida nova inter *C. forficula* Fr. & Sav. et *C. heterolepis* Bunge. Cum specie posteriore ut videtur similis est, differt tamen utriculis sursum alato-marginatis in rostrum longum angustum utrinque sparse hispidulum abrupte attenuatibus, ore bidentula. (Fig. 1, b)

Bungo: Ikaitobaru (M. Arakane 44, 22/V/1958—Typus in TI).

2) **チャイロクグガヤツリ**——チャガヤツリとクグガヤツリとの自然交配種で，栃木県赤麻沼畔のタデの多い砂地に多数見出された。かなり叢生して，花序部に形のくづれがあるから一見雑種とわかるのであるが，比較的細く硬い稈と葉，それに赤褐色の小穂等チャガヤツリの形質が強く打ち出されている。小穂が長く且太い点が，叢生する点と共にクグガヤツリの性質である。果実はよくみのり，為に広い面積にわたつて拡がつたのであろう。千葉の伊藤至氏と私の採集品である。



Fig. 2. *Cyperus × amurico-compressus.* チヤイロクグガヤツリ (Spikelet ×3).

Cyperus×amurico-compressus T. Koyama, hybrida nova inter *Cyp. amuricum* Maxim. et *Cyp. compressus* Linn. simulans speciei anteriori recedit ab ea spiculis irregulariter dispositis latiroibus longirobsque 2–2.5 mm latis circiter 2.5 cm longis, aristis squamarum robustioribus, culmis densius caespitantibus etc. (Fig. 2).

Shimotsuke: Lac Akama-numa (T. Koyama 7188, 21/X/1956—Typus in TI, Isotypus in TNS); id. (I. Ito).

3) **コウヤガヤツリ**——コゴメガヤツリとウシクグとの間種で，昨年秋小川由一氏が高野山麓に見出された。コゴメガヤツリとウシクグは大変近いものであるから小穂の形に関する限り3者大同小異であるが，雑種はウシクグにむしろ近く，それに比して全体小形，小穂の花数少なく，前項に記した如く矢張り一種形のくづれが見られるのでそれと気付く。コウヤガヤツリは小川氏の命名で既に同氏の最近の著「紀伊高野山植物誌」に名と写真が出ている。ここに示した写真も亦同氏に拠るものである。

Cyperus×boreali-kiiensis T. Koyama & Ogawa, hybrida nova inter *Cyp. Iria* Linn. et *Cyp. orthostachys* Fr. et Sav. persimilis cum specie posteriore recedit ab hoc habitu minoribus, spiculis brevioribus paucius florentibus, squamis apice mucronatis. (Fig. 3)

Kii: Kudoyama ad pedem montis Kōyae (Y. Ogawa 12, 8/X/1957—Typus in TI).



Fig. 3. *Cyperus×boreali*-kiiensis コウヤガヤツリ (小川由一写)

□LOCQUIN, Marcel: **Chromotaxia** (Mycological and pedological colour index) 1957 1.000 teintes, principalement lavées et rabattues, imprimée sur papier mat —— Locquin, 14, rue de Buffon, Paris (5 me)　Franco Etranger 2.500 fr.

従来の色彩票は Ridgway をはじめ多く出版されているが，すべて色紙を用いてある。本書ではこれらの型を破つて透明な薄い色板を用い，これを組合せて多くの色調を表現出来るようになつている。色板は6色あり，各色は濃さの異る6種が用意されてある。このうちの適当な2枚乃至3枚組合せて目的の色をつくり出し，別に用意された色名帳によりその色に相当する英，仏，独，ラテン名が引き出せるようになつている。色名帳，色彩表，色板を一緒に入れるショウシャな防水カバーがあり，野外で持歩き出来るようになつている。これを使いこなせるには相当な時日が必要であろう。著者はパリー科学博物館の菌類学者であり，このクロモタキシアは書物ではなく器具であると称している。型破りの現物のためか，まだ個人で購入した者は日本では久内さんと私だけのようである（小林義雄）

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All communications to be addressed to the Editor

Dr. **Yasuhiko Asahina,** Prof. Emeritus, M. J. A.

Pharmaceutical Institute, Faculty of Pharmaceutical Sciences, University of Tokyo

Hongo, Tokyo, Japan.

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